②

A SET OF TEMPLATES FOR EVALUATING WARGAMES

(BENCHMARKS)

AD-A201 392

DTIC
S ELECTE D
NOV 1 8 1988
H

Prepared by

ROBERT McQUIE

U.S. Army Concepts Analysis Agency

October 1988

38 11 18 153

REPORT DOCUMENTATION PAGE		Form Approved OMB No 0704-0188
1a. REPORT SECURITY CLASSIFICATION Unclassified	1b. RESTRICTIVE MARKINGS	
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT Unrestricted	
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE		
4. PERFORMING ORGANIZATION REPORT NUMBER(S) N/A	5. MONITORING ORGANIZATION REPORT NUMBER (S) N/A	

6a. NAME OF PERFORMING ORGANIZATION U.S. Army Concepts Analysis Agency	6b. OFFICE SYMBOL (if applicable) CSCA-MVM	7a. NAME OF MONITORING ORGANIZATION
6c. ADDRESS (City, State, and ZIP Code) 8120 Woodmont Avenue Bethesda, MD . 20814-2797		7b. ADDRESS (City, State, and ZIP Code)
8a. NAME OF FUNDING/SPONSORING ORGANIZATION	8b. OFFICE SYMBOL (if applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER

8c. ADDRESS (City, State, and ZIP Code)	10. SOURCE OF FUNDING NUMBERS			
	PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.	WORK UNIT ACCESSION NO

11. TITLE (Include Security Classification)
A Set of Templates for Evaluating Wargames (BENCHMARKS)

12. PERSONAL AUTHOR(S)
Robert McQuie

13a. TYPE OF REPORT Final Report	13b. TIME COVERED FROM ___ TO ___	14. DATE OF REPORT (Year, Month, Day) 1988 October 1	15. PAGE COUNT 9

16. SUPPLEMENTARY NOTATION

19. ABSTRACT (Continue on reverse if necessary and identify by block number)
A set of templates are presented that can be used in quickly comparing wargame results with history. These templates are based on data about 260 historical battles between 1937 and 1982. 31 ratios and rates were extracted from this data describing key aspects of each battle. The data and results have been published in a report published by the U.S. Army Concepts Analysis Agency. The 31 measures summarize the following aspects of the battles: (1) relative advantage; (2) target density; (3) weapon density; (4) casualties & losses; (5) movement & duration; (6) artillery fire. The templates provide a summary description of combined arms combat as it has existed in our lifetime.
Keywords:)

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT ☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS	21. ABSTRACT SECURITY CLASSIFICATION Unclassified	
22a. NAME OF RESPONSIBLE INDIVIDUAL Robert McQuie	22b. TELEPHONE (Include Area Code) (301)295-4725	22c. OFFICE SYMBOL CSCA-MVM

DD Form 1473, JUN 86   Previous editions are obsolete.   SECURITY CLASSIFICATION OF THIS PAGE

EXPLANATION

A set of templates are presented here that can be used in comparing wargame results with history. These templates are based on data about 260 historical battles between 1937 and 1982. This data has been assembled over a quarter of a century by Colonel Trevor N. Dupuy, USA, Ret and his military historian colleagues at Data Memory Systems, Inc. This historical data, like wargame data itself is not easy to interpret.

To facilitate interpretation and enable the data to be compared with wargame results, 31 ratios and rates were extracted from it describing key aspects of each battle. The data and results may be found in a report published by the US Army Concepts Analysis Agency. The 31 measures summarize the following aspects of the 260 battles:

> relative advantage
> target density
> weapon density
> casualties & losses
> movement & duration
> artillery fire

From the array of values for each of the 31 ratios or rates, three values were extracted:

a. The median value.

b. The range in which the middle 50% of the values are found.

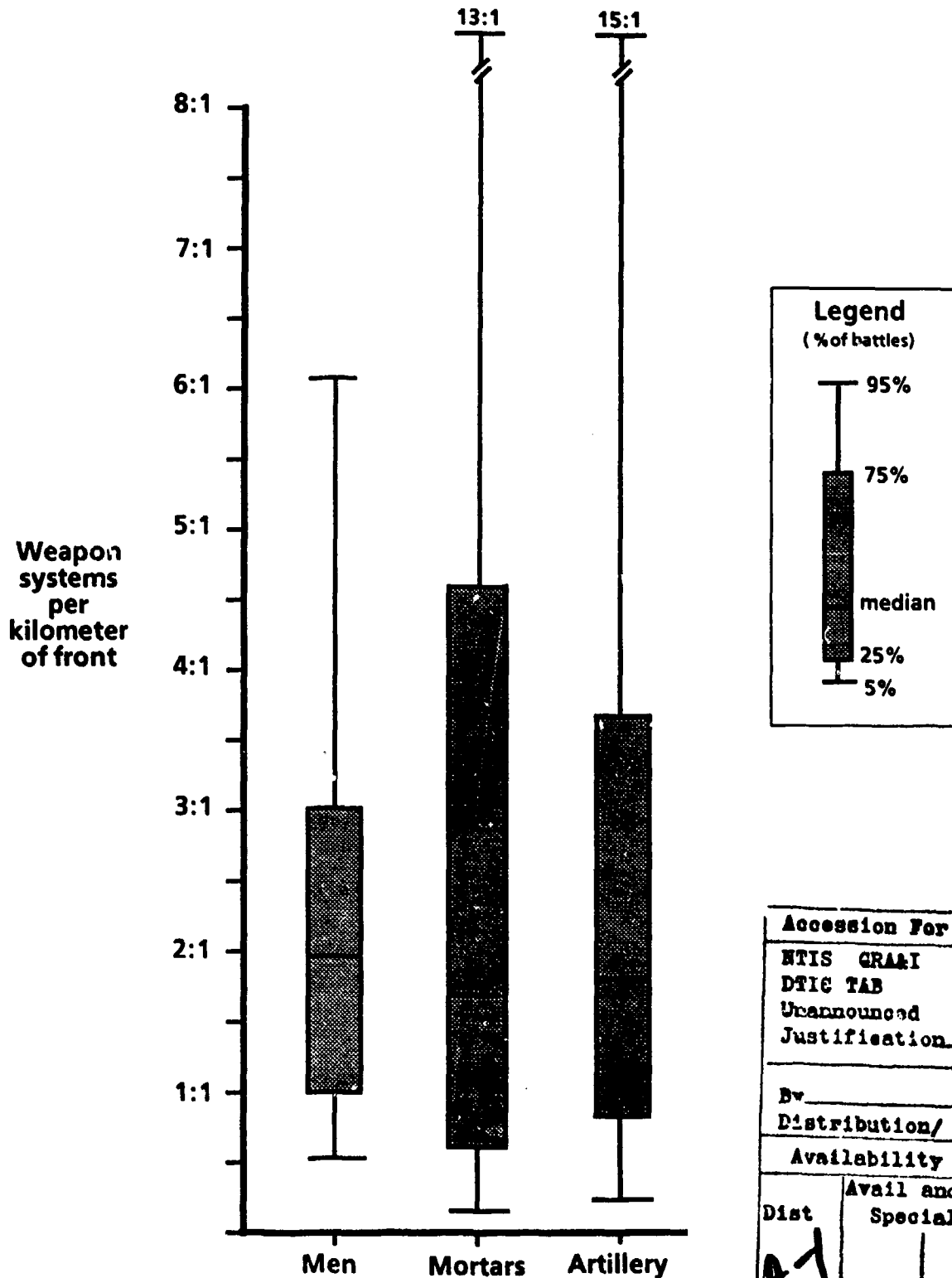c. The range in which 90% of the values are found.

These three values were used to construct the templates on the following pages. In each template, the "box" shows the range in which the middle 50% of the values were found; the "whiskers" at each end of the box show the range of values extended to 90% of the battles. The median value of the measure is shown as a horizontal line across the middle of the box.

When the range of a characteristic is so wide that it cannot be diagrammed on the template, the whisker has been truncated, with the actual value shown by a small figure at its end. Otherwise, the scale at the left edge shows the values and units of measure. Questions about these templates may be referred to the author (AV: 295-5227).

The templates provide, it may be noted, a summary description of combined arms combat as it has existed in our lifetime.
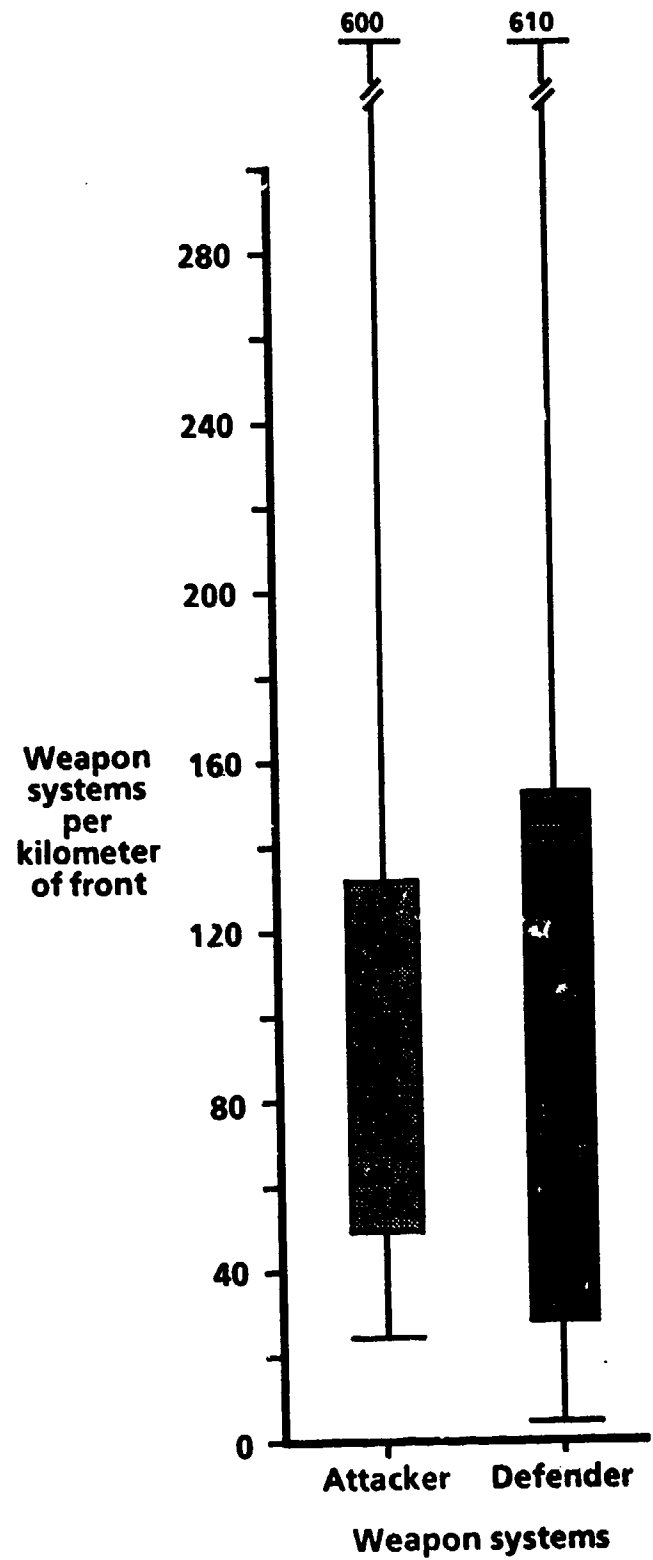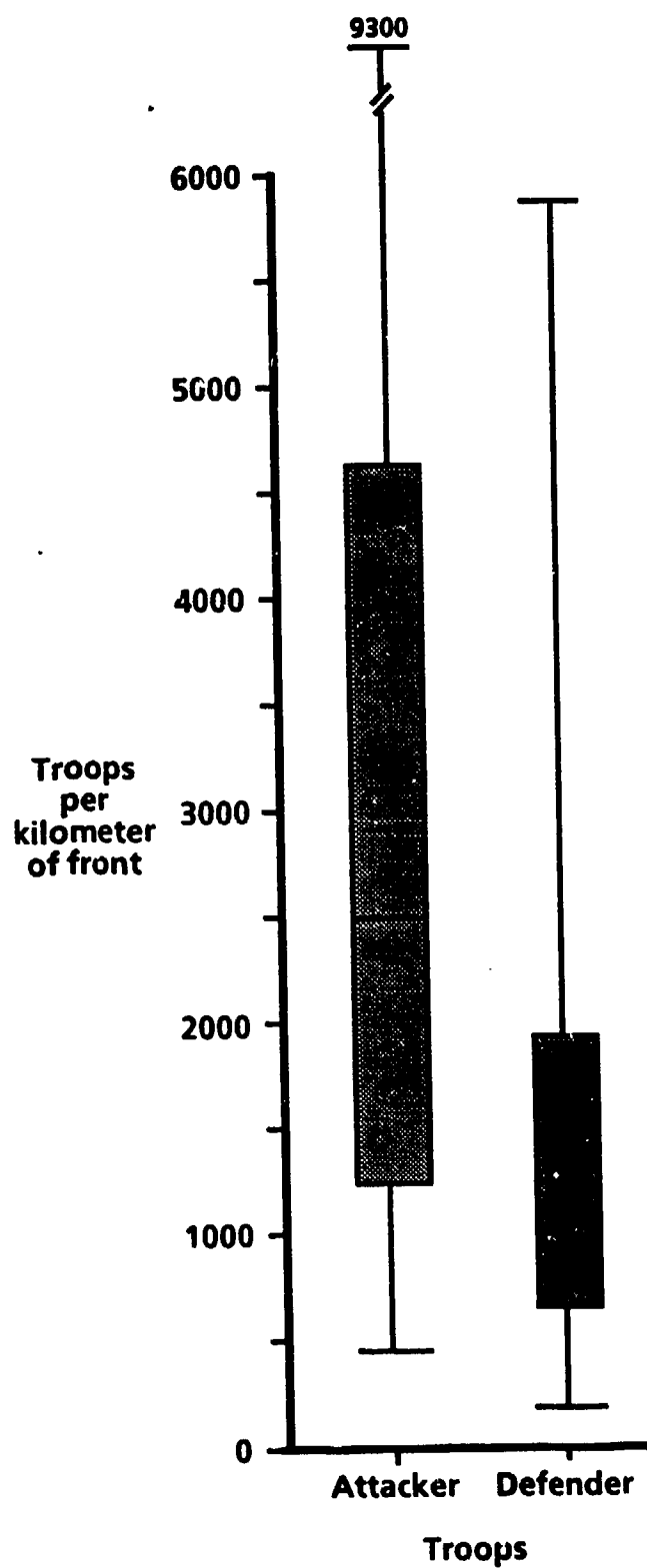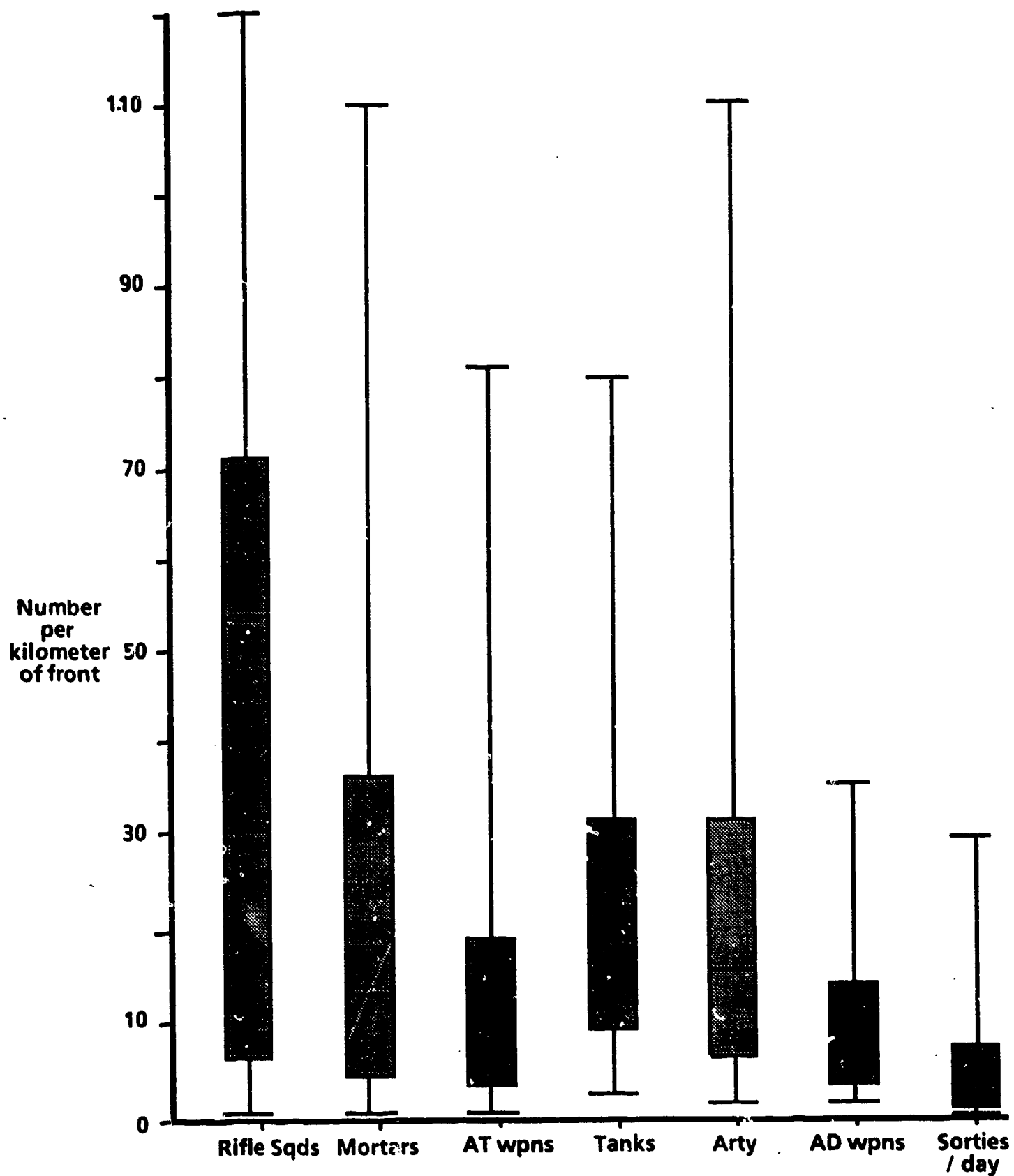
INITIAL CONDITIONS
1. RELATIVE ADVANTAGE

Legend
(%of battles)

- 95%
- 75%
- median
- 25%
- 5%

Weapon systems per kilometer of front

13:1   15:1

8:1
7:1
6:1
5:1
4:1
3:1
2:1
1:1

Men   Mortars   Artillery

2. TARGETS

Troops

Weapon systems

INITIAL CONDITIONS
3. ATTACKER WEAPONS

Number per kilometer of front

Rifle Sqds   Mortars   AT wpns   Tanks   Arty   AD wpns   Sorties / day

INITIAL CONDITIONS
4. DEFENDER WEAPONS

5. CASUALTIES

Per day of battle

22%

8%

7%

6%

5%

4%

3%

2%

1%

0%

Attacker   Defender

Over time

Per kilometer advanced

71%

6%

5%

4%

3%

2%

1%

0%

Attacker   Defender

Over distance

6. TANK LOSSES

Per day of battle

60%
50%
40%
30%
20%
10%
0%

Attacker   Defender

Over time

Per kilometer advanced

11%   13%

4%
3%
2%
1%
0%

Attacker   Defender

Over distance
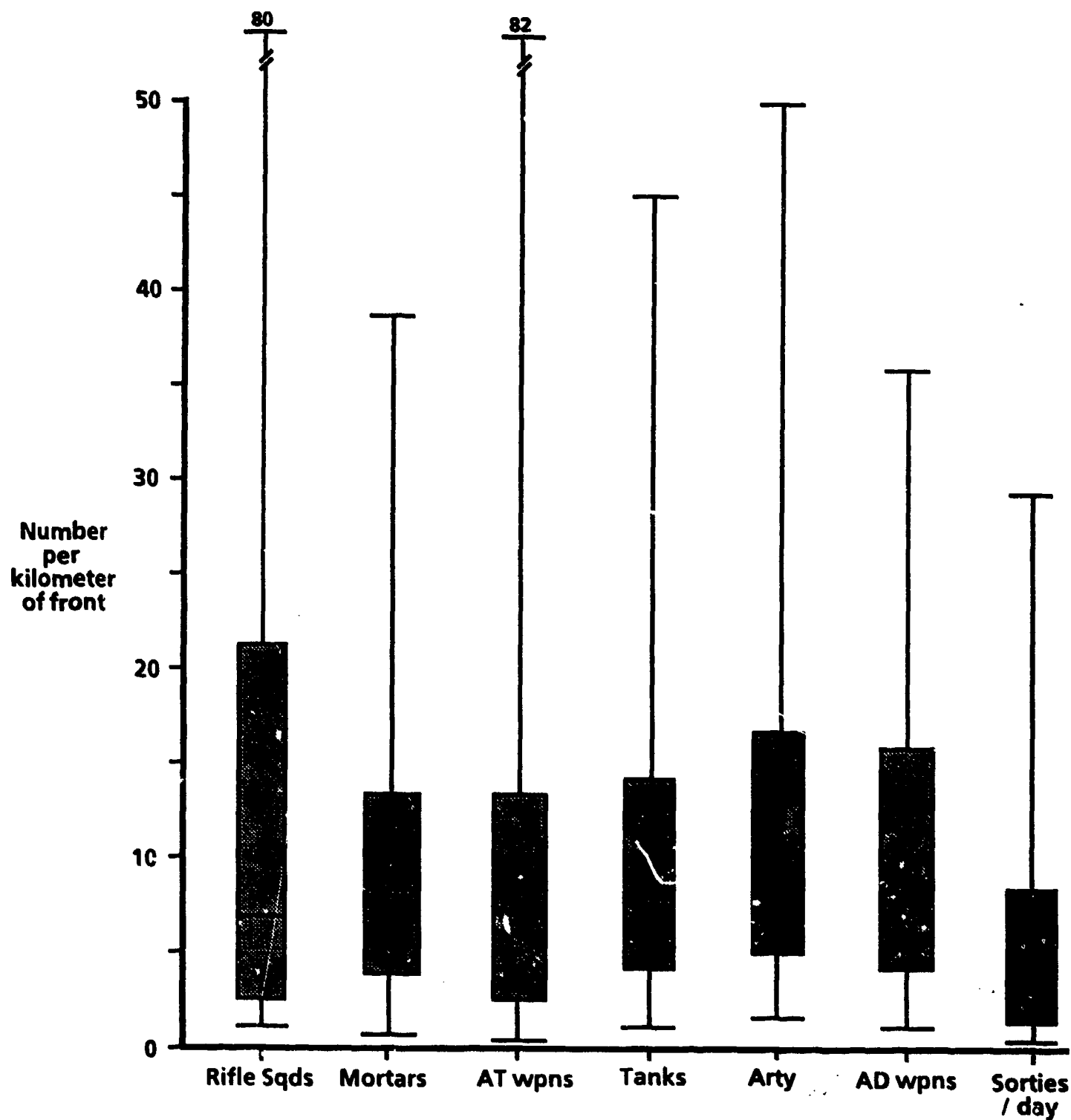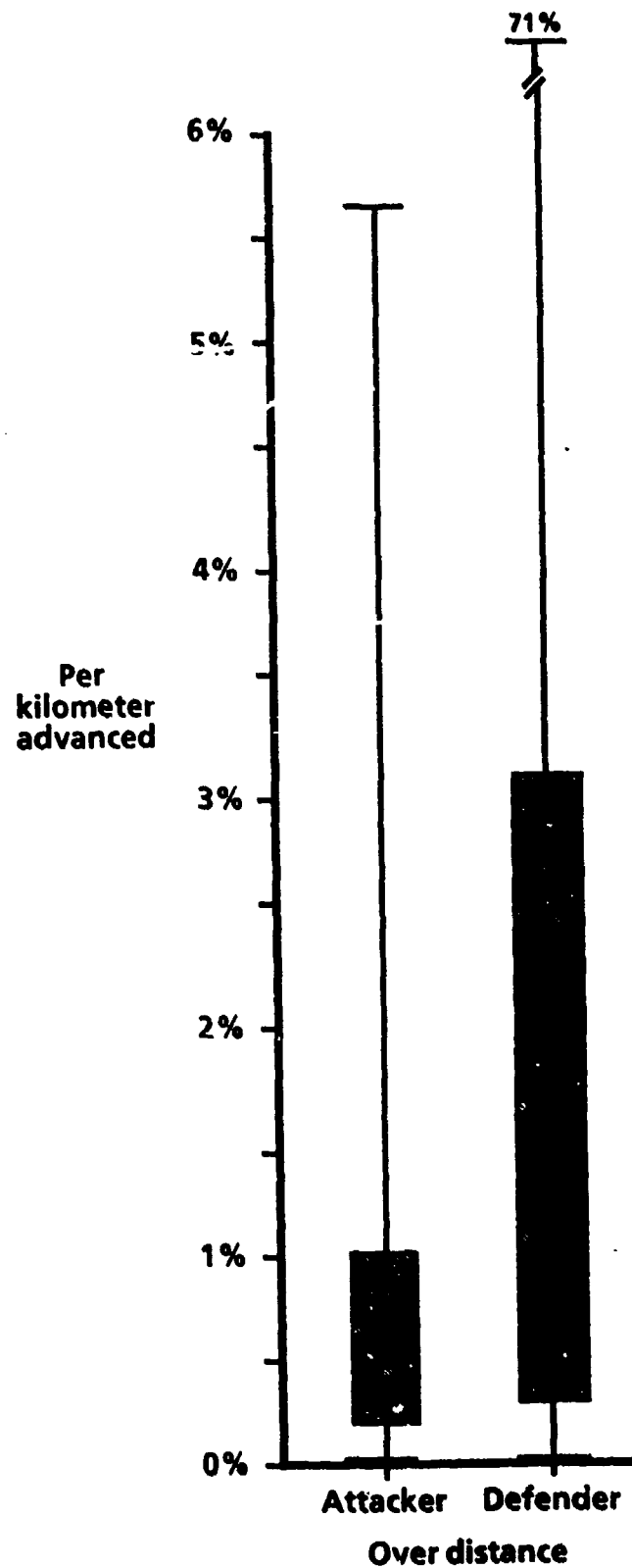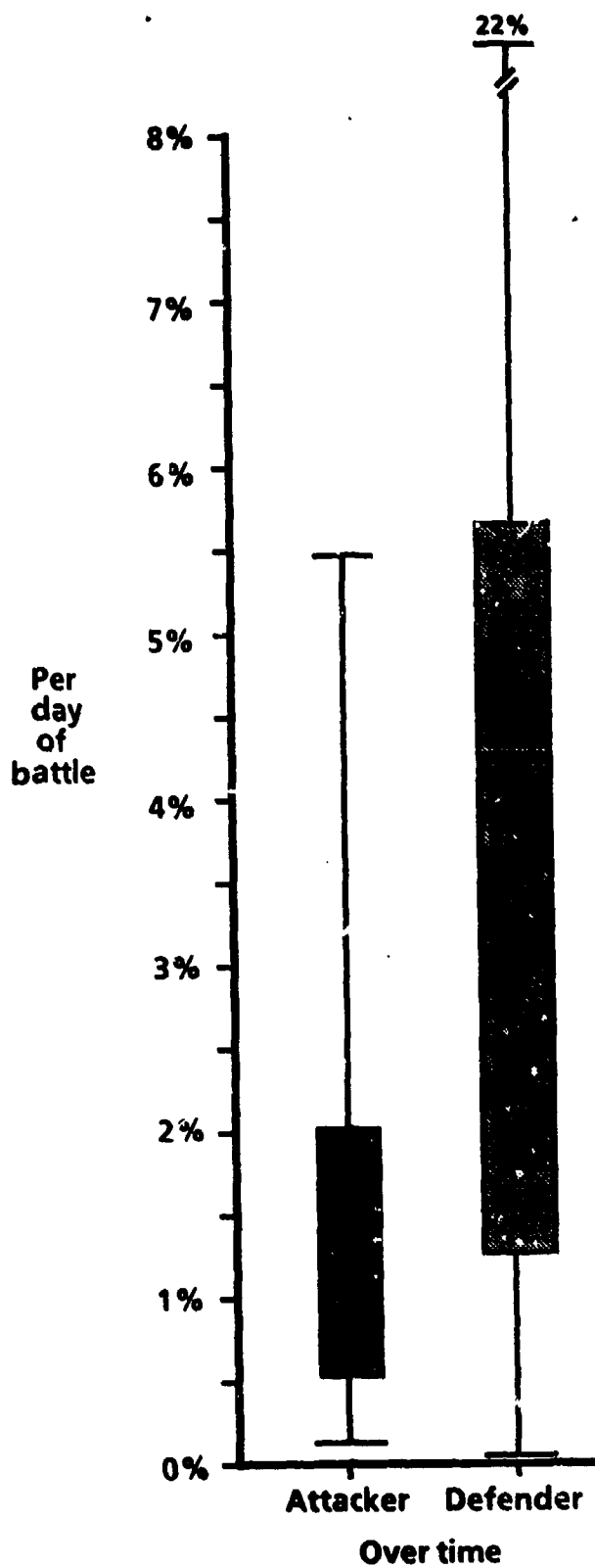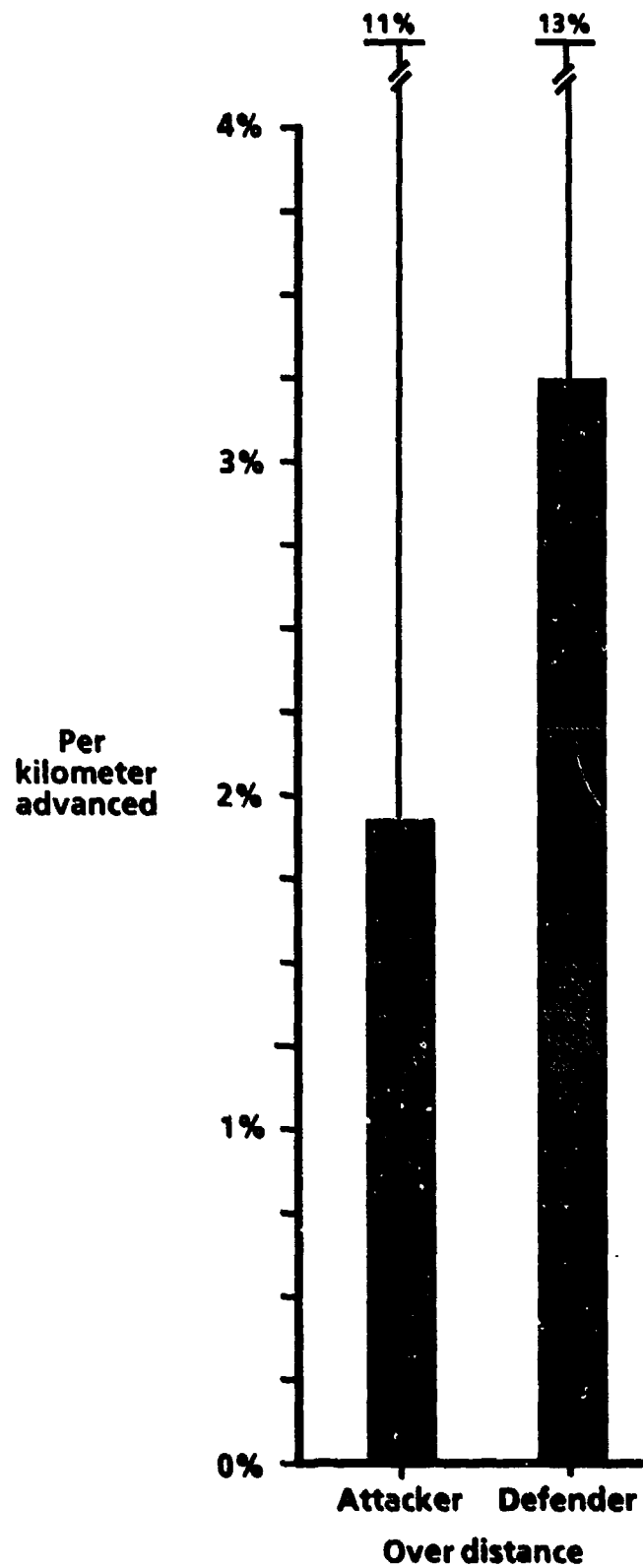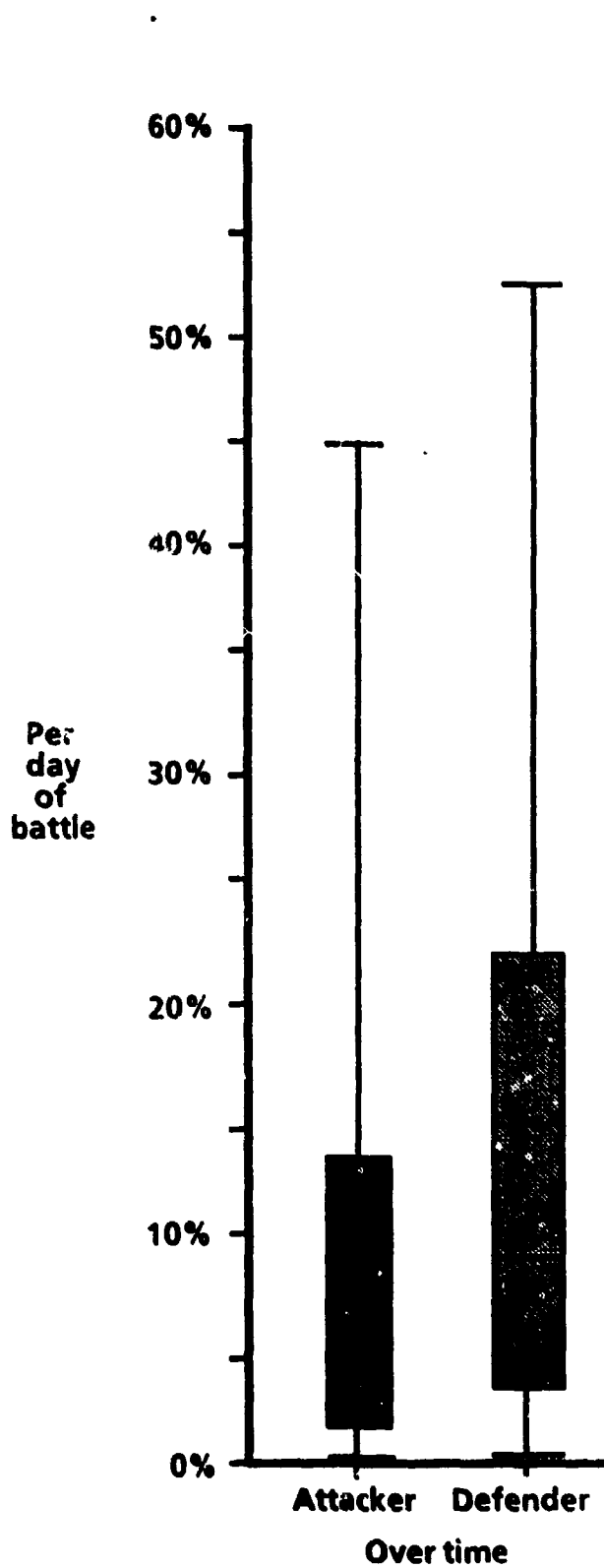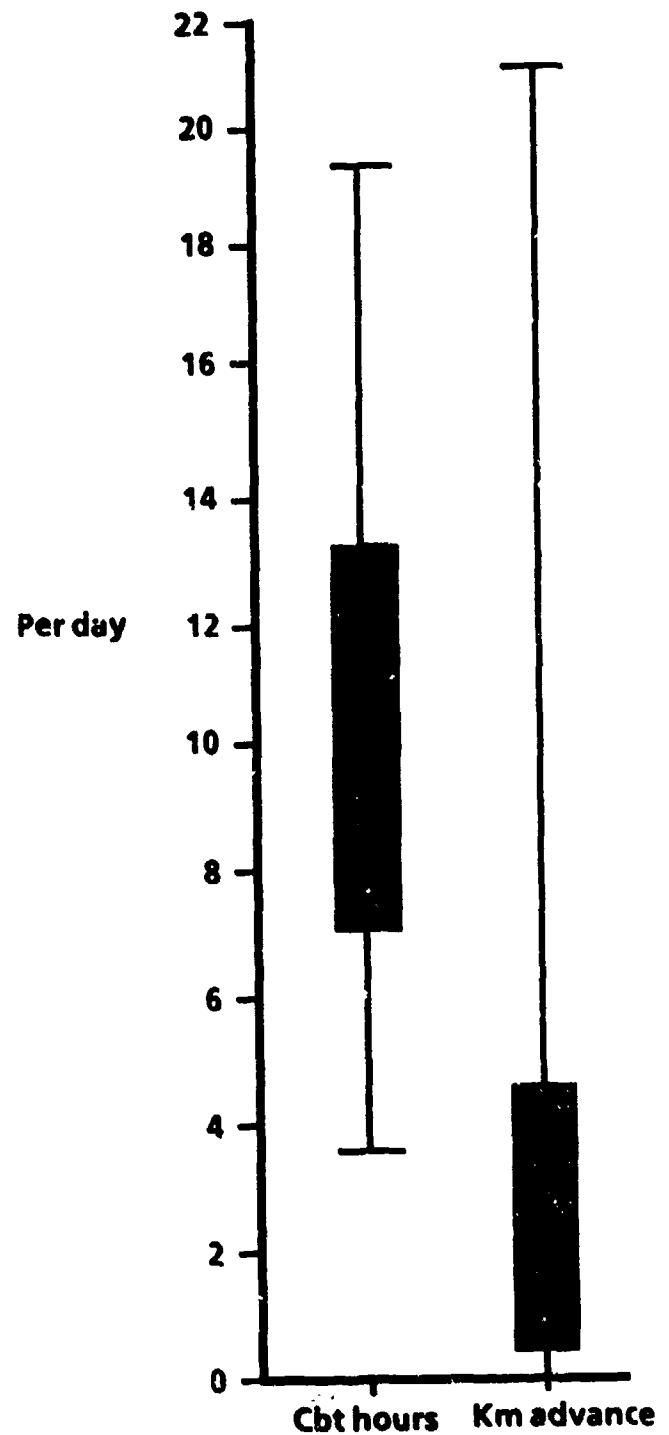
OUTCOMES

7a. LOSS RATIO

7b. TIME-DISTANCE

8. ROUNDS FIRED

Rounds per artillery tube per day (y-axis, 0 to 100)

Categories: Attack, Defense, Pursuit